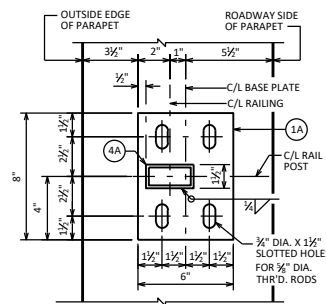


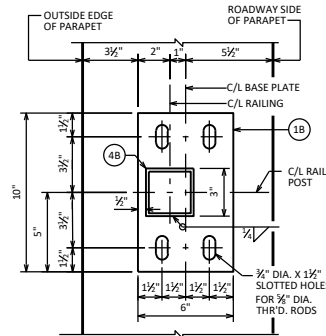
SECTION THRU PARAPET ON BRIDGE

*ADJUST LOCATIONS OF BARS TO ALLOW PLACEMENT OF ANCHOR ASSEMBLY FOR RAILING AND BEAM GUARD (WHEN REQ'D.).



TYPICAL RAIL POST BASE PLATE

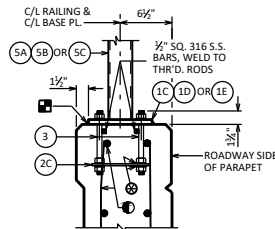
FOR 3" X 1 1/2" X 3/8" POSTS (1A)



TYPICAL RAIL POST BASE PLATE

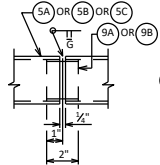
FOR 3" X 3" X 3/8" POSTS (1B)

1 WHEN ADHESIVE ANCHORS ARE USED, FIELD BEND AND/OR DISPLACE TO AVOID HITTING LONGITUDINAL BAR WHEN DRILLING FOR ADHESIVE ANCHORS.



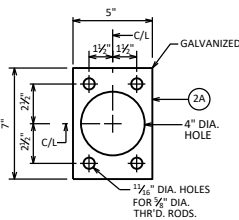
ANCHORAGE FOR END RAIL

NOTE: USE 8" THRD. ROD AT PLATE 1D WHEN ADJ. TO BEAM GUARD ANCHOR ASSEMBLY
NOTE: ANCHOR PLATE NOT REQUIRED WHEN ADHESIVE ANCHORS ARE USED.



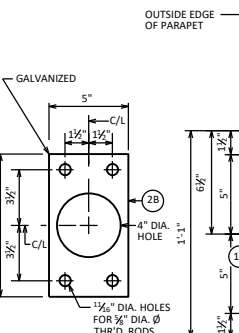
SHOP RAIL SPLICE DETAIL

(LOCATION MUST BE SHOWN ON SHOP DRAWINGS)



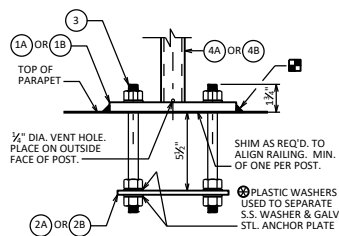
ANCHOR PLATE

FOR 3" X 1 1/2" X 3/8" POSTS (2A)



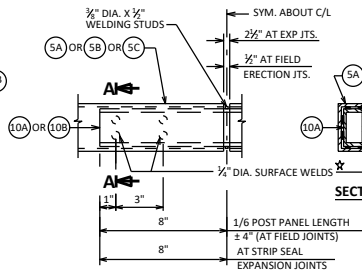
ANCHOR PLATE

FOR 3" X 3" X 3/8" POSTS (2B)



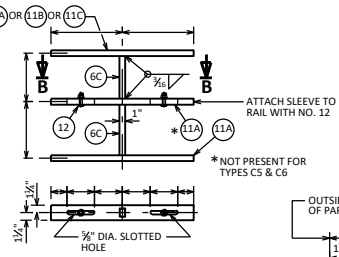
ANCHORAGE FOR RAIL POSTS

NOTE: ANCHOR PLATE NOT REQUIRED WHEN ADHESIVE ANCHORS ARE USED.



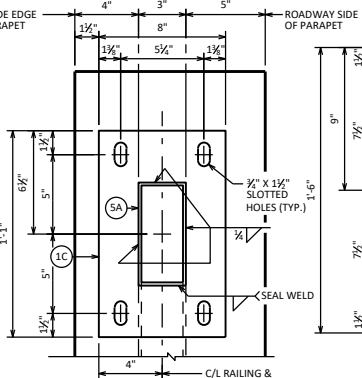
FIELD ERECTION JOINT DETAIL

*MIN. 1/2" FLAT SURFACE DIA. PUNCHING OR STUDS MAY BE USED AS AN ALTERNATE.



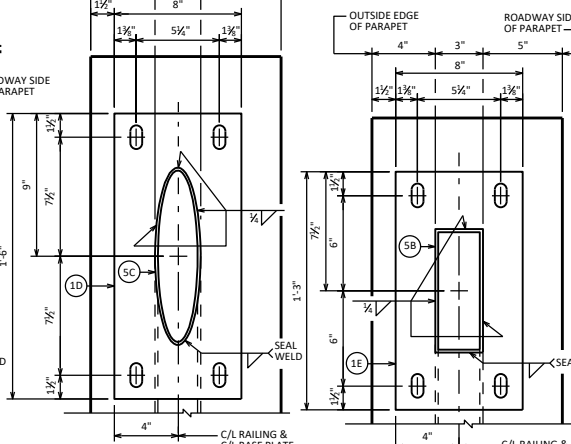
SECTION B-B MODULAR JOINT SLEEVE DETAIL

*NOT PRESENT FOR TYPES C5 & C6



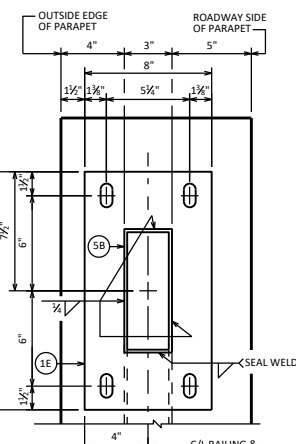
END RAIL BASE PLATE

FOR 3" X 1 1/2" X 3/8" POSTS (3A)



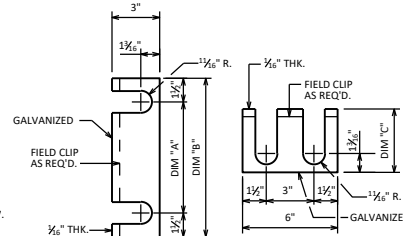
END RAIL BASE PLATE

FOR 2 1/2" DIA. STANDARD PIPE RAIL (3C)



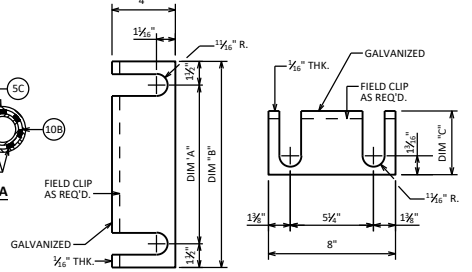
END RAIL BASE PLATE

FOR 3" X 2" X 3/8" POSTS (3B)



RAIL POST SHIM DETAIL

6" X 8" BASE PLATE (1A) DIM "A" = 5", DIM "B" = 8", DIM "C" = 4"
6" X 10" BASE PLATE (1B) DIM "A" = 7", DIM "B" = 10", DIM "C" = 5"
(2 SETS PER POST)



END RAIL SHIM DETAIL

8" X 1'-1" BASE PLATE (11A) DIM "A" = 10", DIM "B" = 1'-1", DIM "C" = 6 1/2"
8" X 1'-6" BASE PLATE (11B) DIM "A" = 1'-3", DIM "B" = 1'-6", DIM "C" = 9"
8" X 1'-3" BASE PLATE (11C) DIM "A" = 1'-0", DIM "B" = 1'-3", DIM "C" = 7 1/2"
(2 SETS PER POST)

LEGEND

- (1A) PLATE 3/8" X 6" X 8" WITH 3/4" X 1 1/2" SLOTTED HOLES.
- (1B) PLATE 3/8" X 6" X 10" WITH 3/4" X 1 1/2" SLOTTED HOLES.
- (1C) PLATE 3/8" X 8" X 1'-1" WITH 3/4" X 1 1/2" SLOTTED HOLES.
- (1D) PLATE 3/8" X 8" X 1'-6" WITH 3/4" X 1 1/2" SLOTTED HOLES.
- (1E) PLATE 3/8" X 8" X 1'-3" WITH 3/4" X 1 1/2" SLOTTED HOLES.
- (2A) 4" X 5" X 7" ANCHOR PLATE WITH 1/16" DIA. HOLES FOR THRD. RODS NO. 3.
- (2B) 4" X 5" X 9" ANCHOR PLATE WITH 1/16" DIA. HOLES FOR THRD. RODS NO. 3.
- (2C) 1/4" X 2 1/2" X 7 1/2" ANCHOR PLATE WITH 1/16" DIA. HOLES FOR THRD. RODS NO. 3.
- (3) 1/4" DIA. X 9" LONG, TYPE 316 STAINLESS STEEL THREADED RODS (MIN. TENSILE STRENGTH = 70 KSI) WITH NUT AND WASHERS OF SAME ALLOY GROUP. ALTERNATIVE ANCHORAGE: CONCRETE ADHESIVE ANCHORS 3/8" INCH EMBED 7" IN CONCRETE FOR RAIL POSTS. EMBED 5" IN CONCRETE FOR END RAILS. ADHESIVE ANCHORS SHALL CONFORM TO SECTIONS 502.2.12 AND 502.3.14 OF THE STANDARD SPECIFICATIONS.
- (4A) STRUCTURAL TUBING 3" X 3" X 3/8". PLACE VERTICAL. WELD TO NO.1 & 5.
- (4B) STRUCTURAL TUBING 3" X 3" X 3/8". PLACE VERTICAL. WELD TO NO.1 & 5.
- (5A) STRUCTURAL TUBING 3" X 2" X 3/8" RAILS. WELD TO NO.1 & NO.4. INSIDE OF TUBE TO BE PAINTED AT ALL FIELD ERECTION & EXPANSION JOINTS.
- (5B) STRUCTURAL TUBING 3" X 2" X 3/8" RAILS. WELD TO NO.1 & NO.4. INSIDE OF TUBE TO BE PAINTED AT ALL FIELD ERECTION & EXPANSION JOINTS.
- (5C) STRUCTURAL TUBING 2 1/2" DIA. (STANDARD SIZE) (2.875" O.D.). WELD TO NO.1 & 4. INSIDE OF TUBE TO BE PAINTED AT ALL FIELD ERECTION & EXPANSION JOINTS.
- (6A) BAR 1" X 1" PICKETS. WELD TO NO. 5. (SPACE AT 6" MAX. C/L TO C/L SPACING). PLACE VERTICAL.
- (6B) BAR 1" X 1 1/2" PICKETS. WELD TO NO.5. (SPACE AT 6" MAX. C/L TO C/L SPACING). PLACE VERTICAL.
- (7) BAR 1" X 1 1/2" PICKETS. WELD TO NO.11. PLACE VERTICAL.
- (8) BAR 1" X 1" - BEND TO REQUIRED RADIUS. WELD TO NO. 4 & 5.
- (9) STRUCTURAL TUBING 5" DIA. (STANDARD SIZE) (5.563" O.D.) 1 1/2" LONG SLICES. WELD TO NO.5A.
- (10A) RECTANGULAR SLEEVE FABRICATED FROM 3/8" PLATES. PROVIDE "SLIDING FIT".
- (10B) CIRCULAR SLEEVE FABRICATED FROM STRUCTURAL TUBING 2" DIA. (STANDARD SIZE) (2.375" O.D.).
- (10C) RECTANGULAR SLEEVE FABRICATED FROM 3/8" PLATES. (1'-4" @ FIELD ERECTION JTS.) (1'-4" @ STRIP SEAL EXP. JTS.)
- (10D) CIRCULAR SLEEVE FABRICATED FROM STRUCTURAL TUBING 2" DIA. (STANDARD SIZE) (2.375" O.D.) (1'-4" @ FIELD ERECTION JTS.) (1'-4" @ STRIP SEAL EXP. JTS.)
- (11A) BAR 2 1/2" X 1" X " -.
- (11B) BAR 2 1/2" X 1 1/2" X " -.
- (11C) STRUCTURAL TUBING 2" DIA. (STANDARD SIZE) (2.375" O.D.) X " -.
- (12) 1/2" DIA. STAINLESS STEEL BOLT WITH NUT AND LOCKWASHER.

NOTES

- BID ITEM SHALL BE "RAILING STEEL TYPE C(1-6)", WHICH SHALL INCLUDE ALL STEEL ITEMS SHOWN.
- POST BASE PLATES SHALL BE FLAT WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL. ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUTS.
- ALL PLATES, BARS, AND RECTANGULAR SLEEVES SHALL CONFORM TO ASTM A709 GRADE 36. ALL STRUCTURAL TUBING SHALL CONFORM TO ASTM A500 GRADE B.
- ANCHORAGES SHALL BE ACCURATELY PLACED TO PROVIDE CORRECT ALIGNMENT OF RAILING. SET NORMAL TO GRADE.
- CUT BOTTOM OF POST TO MAKE POST VERTICAL IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTION.
- STEEL SHIMS SHALL BE PROVIDED & USED UNDER BASE PLATES WHERE REQUIRED FOR ALIGNMENT, AND SHALL BE GALVANIZED.
- CAULK AROUND PERIMETER OF BASE PLATES, NO. 1, AND FILL BOLT SLOT OPENINGS IN SHIMS AND BASE PLATES WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER.
- ALL JOINTS AND RECESSES IN CONCRETE PARAPET ARE TO BE VERTICAL.
- ALL MATERIAL (EXCEPT NO. 3 & 12) SHALL BE GALVANIZED AFTER FABRICATION. PRIOR TO GALVANIZING, THE STEEL RAILING SHALL BE GIVEN A NO. 6 BLAST CLEANING PER SSPC SPECIFICATIONS. PAINT OVER GALVANIZING WITH AN APPROVED TIE COAT AND TOP COAT AS SPECIFIED IN THE CONTRACT DOCUMENTS. THE RAILING SHALL BE PAINTED AM5 STD. COLOR NO. [] FILL IN COLOR NAME).
- RAILING SHALL BE FABRICATED IN LENGTHS THAT INCLUDE 3 OR 4 POSTS.
- VENT HOLES SHALL BE DRILLED IN POST AND RAIL MEMBERS AS REQUIRED TO FACILITATE GALVANIZING AND DRAINAGE.
- TOUCH-UP PAINTING TO BE DONE AT COMPLETION OF STEEL RAILING INSTALLATION TO THE SATISFACTION OF THE ENGINEER AT NO EXTRA COST.

COMBINATION RAILING DETAILS

BUREAU OF STRUCTURES

APPROVED: *Laura Shadewald* DATE: 1-20